

Santa Margarita Valley Groundwater Basin

- Groundwater Basin Number: 9-04
- County: San Diego
- Surface Area: 7,960 acres (12.4 square miles)

Basin Boundaries and Hydrology

This basin underlies the western part of Santa Margarita Valley in northern coastal San Diego County. The basin is bounded by nonwater-bearing crystalline rocks on the northeast, semiwater-bearing Tertiary sedimentary rocks on the northwest and southwest, and the Pacific Ocean on the west. The valley is drained westward to the Pacific Ocean by the Santa Margarita River. Average annual precipitation ranges from 7 to 15 inches.

Hydrogeologic Information

Water Bearing Formations

The water-bearing unit within the basin is Quaternary age alluvial deposits, which consist of unconsolidated gravel, sand, silt and clay, that are 150 to 200 feet thick (DWR 1956). Well yields in the basin range from 200 to 1,980 gpm (DWR 1956). Groundwater is unconfined in the eastern portion and semi-confined in the western portion of the basin (DWR 1956). Groundwater is also extracted from residuum and fractured bedrock beneath the basin.

Restrictive Structures

An unnamed northeast-trending fault cuts the northeastern portion of the basin; however, the effect of this fault on groundwater movement in this basin is unknown.

Recharge Areas

Natural recharge of the alluvial aquifer is primarily from percolation in the Santa Margarita River, with smaller amounts contributed by infiltration of precipitation falling to the valley floor (DWR 1956).

Groundwater Level Trends

Groundwater moves west through the basin toward the Pacific Ocean (DWR 1956). A hydrograph for one well in the central part of the basin shows stable water levels during 1921 through 1935, a series of cyclic declines of 10 to 14 feet over several years followed by sharp recovery during 1951 through 1973, and fluctuation about a high water level during 1982 through 1988. A hydrograph for one well in the eastern part of the basin shows largely stable water levels with seasonal variation of about 5 feet during 1949 through 1977.

Groundwater Storage

Groundwater Storage Capacity. The total storage capacity of the basin is estimated to be 61,600 af (DWR 1956; 1975).

Groundwater in Storage. Unknown.

Groundwater Budget (Type A)

Replenishment to the basin by percolation of stream flow during January 1952 was about 6,300 af (DWR 1956). Groundwater extraction in 1953 was about 7,070 af (DWR 1956).

Groundwater Quality

Characterization. Groundwater in this basin is mainly sodium chloride in character (DWR 1967), but sodium bicarbonate is also present (DWR 1956). TDS concentrations ranged from 337 to 9,030 mg/L in 1956 (DWR 1956). Groundwater in the northwestern part of the basin is largely suitable for domestic and irrigation uses (DWR 1967).

Impairments. Groundwater in the southwestern part of the basin is marginal to inferior for domestic and irrigation uses (DWR 1967). Magnesium, sulfate, chloride, nitrate, and TDS concentrations are locally high for domestic use; whereas, chloride, boron, and TDS concentrations are locally high for irrigation use (DWR 1975).

Well Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: 200-1,980 gal/min	Average: (DWR 1956)
Total depths (ft)		
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
Marine Corps Base, Camp Pendleton	Groundwater levels	4/monthly
Department of Health Services and cooperators	Title 22 water quality	

Basin Management

Groundwater management:	The Santa Margarita Watershed was adjudicated in 1966 and is managed by a watermaster.	
Water agencies		
Public		
Private	Marine Corps Base, Camp Pendleton	

References Cited

- California Department of Water Resources (DWR). 1956. *Santa Margarita River Investigation*. Bulletin 57. 273 p.
- _____. 1967. *Ground Water Occurrence and Quality: San Diego Region*. Bulletin No. 106-2. 235 p.
- _____. 1975. *California's Ground Water*. Bulletin 118. 135 p.

Additional References

- Jenks, James, Watermaster, Santa Margarita River Watershed. 2000. Letter to Brian Moniz, Groundwater Section, Southern District, California Department of Water Resources. July 17.